



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,377	04/13/2005	Amir Ben-Shalom	P-9077-US	4570
49443 7590 09/18/2007 PEARL COHEN ZEDEK LATZER, LLP 1500 BROADWAY 12TH FLOOR NEW YORK, NY 10036			EXAMINER CHOWDHURY, AFROZA Y	
			ART UNIT 2629	PAPER NUMBER
			MAIL DATE 09/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,377

Applicant(s)

BEN-SHALOM ET AL.

Examiner

Afroza Y. Chowdhury

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-45 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 26-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/14/2005, 5/16/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 26-35, 37, 38, and 40-45 are rejected under 35 U.S.C. 102(e) as being anticipated by **Yuan et al.** (US Patent 6,317,189).

As to claim 26, Yuan et al. discloses a distinct color LCD apparatus including at least one layer of encapsulated cholesteric liquid crystal material (fig. 3(a(46))), col. 6, lines 39-42);

electrically conductive means (fig. 3(a(44))) for addressing a plurality of parallel addresses (col. 6, lines 27-30) across the encapsulated cholesteric liquid crystal material in the at least one layer (fig. 3(a), col. 6, lines 39-47);

and an electrical pulse driving means (fig. 3(a)-(f), col. 6, lines 42-47) connected to said electrically conductive means (fig. 3(a(44))) and arranged to supply drive signals to the plurality of parallel addresses to drive the cholesteric liquid crystal material

Art Unit: 2629

selectively into a homeotropic (fig. 3(f)) state or a planar (fig. 3(b)) state (col. 9, line 66 – col. 10, line 12),

the electrical pulse driving means (fig. 3(a)-(f), col. 6, lines 42-47) being arranged to supply drive signals which provide a predetermined grey level (col. 9, lines 13-21) by driving the cholesteric liquid crystal material into homeotropic state (fig. 6(f)) in a fraction of a predetermined time period (ON state, voltage is higher than intermediate voltage, col. 11, lines 5-13) and into the planar state (fig. 6(b)) in the remainder of said time period (OFF state, col. 10, lines 34-42).

As to claim 27, Yuan et al. teaches a distinct color LCD apparatus including a pair of glass plates on opposite sides of the at least one layer of encapsulated cholesteric liquid crystal material (fig. 3(a(42)), col. 6, lines 49-52).

As to claim 28, Yuan et al. teaches a distinct color LCD apparatus including a front plate made of glass (fig. 3(a(42)), col. 6, lines 49-52).

As to claim 29, Yuan et al. teaches a distinct color LCD apparatus including a back plate made of glass (fig. 3(a(42)), col. 6, lines 48-52).

As to claim 30, Yuan et al. discloses a distinct color LCD apparatus including a back plate made of a nonvolatile inert solid material (fig. 3(a), col. 6, lines 49-53).

Art Unit: 2629

As to claim 31, Yuan et al. teaches a distinct color LCD apparatus where the back plate is one selected from the group consisting of being colored black, being transparent (col. 6, lines 49-52) and being reflective (col. 6, lines 49-52, col. 10, lines 26-35).

As to claim 32, Yuan et al. discloses a distinct color LCD apparatus wherein the back plate is colored with a predetermined spectral bias selected to enhance color characteristics of the most proximate encapsulated cholesteric liquid crystal material in the at least one layer (col. 8, lines 16-30).

As to claim 33, Yuan et al. teaches a distinct color LCD apparatus including at least one "color" layer selected from the list: A. a black near ultra violet layer; B. a black near infra red layer; C. a black visible spectrum absorptive layer (col. 8, lines 16-30).

As to claim 34, Yuan et al. discloses a distinct color LCD apparatus where the electrically conductive means (figs. 3(a, c, e (44))) are arranged to generate an electric field (figs. 3(c), 3(e)) oriented substantially perpendicular across the at least one layer of encapsulated cholesteric liquid crystal material (col. 9, lines 58-62).

As to claim 35, Yuan et al. teaches a distinct color LCD apparatus wherein the electrically conductive means (fig. 3(a(44))) include ITO on facing surfaces of the at

Art Unit: 2629

least one layer (col. 6, lines 48-52).

As to claim 37, Yuan et al. discloses a distinct color LCD apparatus where the electrical pulse driving means (fig. 3(a)-(f), col. 6, lines 42-47) is arranged to supply drive signals which provide a predetermined grey level (col. 9, lines 13-21) by the drive signals being formed, in a number of predetermined portions into which time period is divided (ON state, voltage is higher than intermediate voltage, col. 11, lines 5-13 and OFF state, col. 10, lines 34-42), to drive the cholesteric liquid crystal material into the homeotropic state (fig. 6(f)) in a number of the portions and into the planar state (fig. 6(b)) in the remainder to the portions.

As to claim 38, it is obvious in a LCD apparatus wherein the electrical pulse driving means is arranged to generate a waveform selected from the list: Alternating Current (AC), Balanced Direct Current (bDC), Time Balanced Modulated Charges (tbMC), combinations of the aforesaid, and any of the aforesaid within a predetermined decay envelope.

As to claims 40 and 41, Yuan et al. discloses a distinct color LCD apparatus including at least two said layers of encapsulated liquid crystal material maintained proximate to each other and in a substantially parallel orientation (fig. 3(a)).

As to claim 42, Yuan et al. teaches a distinct color LCD apparatus including an interstitial membrane between a pair of the at least two layers (col. 6, lines 34-42).

As to claim 43, Yuan et al. teaches a distinct color LCD apparatus where the cholesteric liquid crystal material of each one of the at least two layers reflects light of a respective color in the planar state (figs. 3(b), 6(b), col. 10, lines 36-53)).

As to claim 44, Yuan et al. discloses a distinct color LCD apparatus wherein said colors of the at least two layers include a combination selected from the list:

- A. a red layer and a green layer and a blue layer;
- B. a cyan layer and a magenta layer and a yellow layer;
- C. a red layer and a green layer;
- D. an orange layer and a blue layer;
- E. a yellow layer and a magenta layer. (col. 8, lines 23-27, fig. 5).

As to claim 45, Yuan et al. teaches a distinct color LCD apparatus where the electrically conductive means (figs. 3(a, c, e (44))) provides direct drive of each of said plurality of substantially parallel addresses (col. 6, lines 42-48)).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2629

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yuan et al.** (US Patent 6,317,189) in view of **Harada et al.** (US Patent 6,618,102).

As to claim 36, Yuan et al. teaches a color LCD apparatus where cholesteric liquid crystal material dispersed between a pair of electrodes (col. 6, lines 24-53).

Yuan et al. does not teach whether the electrodes (conductors) are vapor deposited.

Harada et al. discloses production photoconductive layers using chemical vapor deposition (CVD) (col. 9, line 66 – col. 10, line 9).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to use similar vapor deposition process as Harada et al. to produce the conductors that are facing surfaces of the at least one layer of the LCD apparatus of Yuan et al. in order to maintain high purity.

As to claim 39, Harada et al. teaches a distinct color LCD apparatus where the electrical pulse driving means includes a controller for optimizing refresh time across an ensemble of the substantially parallel addresses (col. 5, lines 3-9).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Afroza Y. Chowdhury whose telephone number is 571-270-1543. The examiner can normally be reached on 7:30-5:00 EST, 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-272-2600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC

9/12/2007


AMARE MENGISTU
SUPERVISORY PATENT EXAMINER